C-5

DEPARTMENT OF THE NAVY
PUGET SOUND NAVAL SHIPYARD
AND INTERMEDIATE MAINTENANCE FACILITY
1400 FARRAGUT AVENUE
BREMERTON, WASHINGTON 98314-5001

IN REPLY REFER TO:

5090
Ser 106.32/0394
NOV 08 2006

RECEIVED
NOV 13 2006

Mr. Michael F. Gearheard
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, OW-133
Seattle, WA 98101

Dear Mr. Gearheard:

This letter provides the Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF) Discharge Monitoring Reports (DMRs) required under the National Pollutant Discharge Elimination System (NPDES) Permit Number WA-000206-2, for the month of October 2006. The DMRs are found in enclosure (1). The PSNS & IMF had one sample from Outfall 19A that exceeded the "daily maximum" for copper concentration and loading. This one sample caused us to also exceed our "monthly average" for copper concentration and loading.

The high copper concentration was most likely caused by rain washing contaminates off the dry dock floor. This sample was collected near the beginning of a rain event just before our Process Water Collect System (PWCS) diverted the floor drainage to the sewer. The combination of collecting the sample at the beginning of the rain event and before the PWCS could respond, resulted in the sample having a higher than normal concentration of contaminates. In addition, the volume of water being discharged from Outfall 19A is much higher than normal due to single-pass cooling water from a vessel in the dock. This high flow, along with the high concentration, caused us to exceed our loading limits. We are in the process of modifying the PWCS control logic to reduce the possibility of a reoccurrence of this problem.

Questions or comments regarding this information may be addressed to Mr. Bruce Beckwith, Code 106.32, at telephone number (360) 476-0118.

Sincerely,

L. A. Cole

L. A. COLE
Director, Environment, Safety, and
Health Office
By direction of the
Shipyard Commander

Encl: (1) Discharge Monitoring Reports for October 2006

Copy to:
WDOE NWRO (Water Quality Section)

WA-000206-2
C-5

DEPARTMENT OF THE NAVY
PUGET SOUND NAVAL SHIPYARD
AND INTERMEDIATE MAINTENANCE FACILITY
1400 FARRAGUT AVENUE
BREMERTON, WASHINGTON 98314-5001

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MAY 12 2006

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5090.7-4
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MAY 09 2006

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MAY 12 2006

Mr. Michael Gearheard
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-133
Seattle, WA 98101

Dear Mr. Gearheard,

This letter forwards Puget Sound Naval Shipyard and Intermediate Maintenance Facility's (PSNS & IMF's) sediment monitoring results as required under PSNS & IMF'S National Pollutant Discharge Elimination System (NPDES) Permit Number WA-000206-2. This permit requires PSNS & IMF to submit the results of sediment monitoring required by Washington Department of Ecology, Toxic Cleanup Program, and the Environmental Protection Agency's Superfund Program.

Enclosure (1) is the Executive Summary from the draft final 2005 Marine Monitoring Report summarizing the analytical results of the marine sediment samples. Enclosure (2) is the data tables from the draft final 2005 Marine Monitoring Report. This data was collected during calendar year 2005 and is the second post-remedial round of Operable Unit B Marine and Sinclair Inlet sampling. The final 2005 Marine Monitoring Report will be forwarded to the Environmental Protection Agency under separate correspondence when finalized.

Questions or comments regarding this information may be addressed to Mr. Bruce Beckwith, Code 106.32 at telephone number (360) 476-2630.

Sincerely,

SRupp

S. S. RUPP
Head, Environmental Division
Environment, Safety, and
Health Office

Encl: (1) Executive Summary of the draft final 2005 Marine Monitoring Report summarizing the analytical results of the marine sediment samples
(2) Summary Data Tables from draft final 2005 Marine Monitoring Report, dated 01 May 2006

EXECUTIVE SUMMARY OF THE DRAFT FINAL 2005 MARINE MONITORING REPORT SUMMARIZING THE ANALYTICAL RESULTS OF THE MARINE SEDIMENT SAMPLES

Enclosure (1)

EXECUTIVE SUMMARY

This report documents the findings of marine monitoring carried out in 2005 for Operable Unit (OU) B Marine at the Bremerton Naval Complex in Bremerton, Washington. The U.S. Navy conducted this marine monitoring to assess and document conditions in Sinclair Inlet subsequent to remedial actions carried out between 2000 and 2004 to address sediments contaminated with PCBs. The primary remedial actions consisted of sediment dredging, placement of contaminated sediments in an excavated seafloor confined aquatic disposal (CAD) pit, and capping of the CAD pit with clean sand and native sediments. The remedial actions also included capping of a limited nearshore area and enhanced natural recovery (ENR) in areas adjacent to the capped area. ENR, typically used in areas of moderate contamination, involves placing a thin layer of clean sediment or similar material on top of the sediments. Gradual mixing of the clean material with the in-place sediments will dilute the contaminant concentrations.

This is Round 2 of the post-remediation marine monitoring for OU B Marine. Round 1 was performed in 2003.

The OU B Marine monitoring is composed of measures to verify the integrity of various remedy components and measures to assess progress towards cleanup goals. The first category of measures includes bathymetric surveys, sub-bottom profiling, and collection and analysis of sediment cores at the CAD pit. These measures are intended to verify the integrity of the cover layer atop the CAD pit and document conditions in the nearshore cap/ENR area.

The bathymetric survey showed that expected consolidation of sediments at the CAD pit continues, with settlement of up to approximately 4 feet in one area. Otherwise, the survey showed that in general there has been little change in the seafloor contours. The sub-bottom profiling showed that the cap materials over the CAD pit have a thickness ranging from approximately 4 to 10 feet. PCBs were detected in all but one of the core samples collected at the CAD pit, at comparatively low concentrations. Overall the results of the first category of monitoring measures confirmed the integrity of the CAD pit and cap/ENR.

The second category of monitoring measures, intended to assess progress towards cleanup goals, consisted of a comprehensive program of environmental sampling in Sinclair Inlet. The primary sampling involved collection of composite shallow 0 to 10 cm sediment samples based on two square grids, a grid made up of 500-foot squares for OU B Marine and one made up of 1,500-foot squares for the rest of the inlet. The results of the grid-based sampling are used to characterize overall inlet quality on an area-weighted average (AWA) basis. This monitoring category also included two more spatially-limited measures: a special study of sediment quality in previously dredged areas and intensive sampling of 0 to 10 cm sediments in the area immediately surrounding the CAD pit.

The OU B Marine monitoring program also includes sampling of English sole tissues. However, because changes in tissue contaminant levels are expected to occur slowly, tissues are not sampled during every sampling round. No tissue sampling was performed during Round 2.

Several clarifications are needed regarding the presentation of PCB concentrations here. First, the PCB concentrations have been converted to and evaluated on an organic-carbon-normalized basis, arrived at by dividing the measured PCB concentration of the sediment by the carbon content of the sediment. The resulting carbon-normalized PCB values are presented in units of mg of PCB per kg of carbon, or mg/kgOC. This is comparatively standard practice in working with marine sediments because the normalized values are believed to better represent the actual biological significance of the PCB concentrations.

The second key clarification needed on the PCB values used here is a direct outcome of the gas chromatograph lab methods used for measuring PCBs. These chromatographs are equipped with dual columns to better confirm the presence and concentrations of PCBs. Historical practice in selecting which column reading to report as the PCB concentration has varied. Recently it has been common to report the higher-reading column. In contrast, the PCB data used prior to remedy implementation to predict the results of sediment remediation and select site cleanup goals were mostly derived from lower-reading column values. For this reason, in the interests of comparing monitoring program data with cleanup goals on a consistent basis, both column readings are commonly presented here. These data are shown in the form of (secondary column value/reported column value), For example, 9.0/10 mg/kgOC represents a secondary column value of 9.0 and reported column value of 10 mg/kgOC.

Based on the results of the 500-foot grid sampling, the estimated AWA concentration of PCBs in OU B Marine during Round 2 is 9.0/10 mg/kgOC. This result exceeds the post-cleanup AWA concentration predicted for OU B Marine based on pre-cleanup conditions. It also exceeds the ultimate cleanup goal of 3 mg/kg. The Round 2 result is lower than the Round 1 result of 9.6/11 mg/kgOC. The Round 2 estimated AWA value for mercury was 1.1 mg/kg, slightly higher than the Round 1 value of 1.0 mg/kg.

The estimated AWA PCB concentration for all of Sinclair Inlet, based on the results of sampling of both grids, is 3.9/4.5 mg/kgOC. This value exceeds the value predicted for post-remedial conditions as well as the ultimate cleanup goal of 1.2 mg/kgOC. The comparable Round 1 result was 4.1/5.4 mg/kgOC. Sediment recovery predictions made during Round 1 using the same sediment recovery model used in pre-remedy analyses suggest that it is unlikely based on the Round 2 findings that the cleanup goals will be met in 10 years. However, the Round 2 results are slightly better than was predicted based on the Round 1 results, possibly reflecting excessively conservatism in the original sediment recovery model. This model has been generally supplanted for use in sediment site evaluations recently by more sophisticated models. The Navy is in the process of evaluating alternative widely-used recovery models and collecting additional information to support improved sediment recovery modeling, e.g., related to sediment transport phenomena.

The estimated AWA mercury value for the inlet is 0.62 mg/kg, identical to the Round 1 result.

The results of intensive sampling adjacent to the CAD pit lead to an estimated AWA PCB value for this area of 7.2/8.3 mg/kgOC. The comparable value from Round 1 was 9.9/11 mg/kgOC. The PCBs measured in this area in Round 2 are estimated to contribute 0.13/0.15 mg/kgOC to the overall AWA PCB value for OU B Marine.

The results of sampling of previously dredged areas showed that PCB concentrations in the sampled areas exceeded pre-remediation assumptions and were comparable to concentrations measured in adjacent non-remediated sediments.

One important insight resulting from Round 1 was that when a sediment sample is analyzed repeatedly an occasional PCB result can be dramatically different from the other analyses on the same sample. This is a concern, because results that are substantially different from the true average sample contaminant level would tend to degrade the quality of the data and potentially compromise interpretations of the results of ongoing monitoring and comparisons with cleanup goals. In response to this finding, a special study of sediment sample data variability was included in Round 2. This study involved multiple lab analyses for a subset of the grid-based sediment samples. This study confirmed the Round 1 finding; on occasion one of the results for a multiply-analyzed sample was found to be dramatically higher than the other results for that sample. Follow-on data studies by the Navy identified several locations where the PCB results varied dramatically between Rounds 1 and 2, suggesting possible anomalies. Archived Round 2 sample material for these locations was subsequently reanalyzed several times to assess the representativeness of the original results.

All of the multiple individual sample results for a given reanalyzed sample can be presumed to be equally valid in lieu of evidence to the contrary. For this reason, the average of all of the results for a repeatedly analyzed sample can be considered the best value to use to represent the true PCB concentration in the sample. The AWA PCB value for all of Sinclair Inlet computed using the sample averages for all of the samples subjected to multiple analyses in Round 2 lowers the estimated AWA PCB value for Sinclair Inlet to 3.7/4.2 mg/kgOC.

One key conclusion from these studies of sediment PCB data variability is that incomplete mixing of these highly heterogeneous sediment samples can undermine use of monitoring program data for drawing accurate, reliable conclusions about site conditions. For this reason, one of the primary recommendations for the next monitoring round, scheduled for 2007, is to increase the emphasis on sample mixing, likely through use of mechanical mixing of some sort.

The 2007 monitoring will include collection and analysis of English sole tissue samples in addition to marine sediments.

SUMMARY DATA TABLES FROM DRAFT FINAL 2005 MARINE MONITORING REPORT
DATED 01 MAY 2006

Enclosure (2)

Table 3-1
2005 CAD Pit Cores

Core Number	Core Segment (ft below top of core)	% Fines (clay + silt)	TOC (%)	Total PCBs - bulk (µg/kg)		Total PCBs - normalized (mg/kgOC)		Mercury (mg/kg)
				R	S	R	S	
Pit-01	0 - 1.0	94	2.2	11	14	0.50	0.64	0.13
	1.0 - 2.0	94	2.3	11	8.8	0.48	0.38	0.10
	2.0 - 3.0	92	2.4	18	23	0.75	0.96	0.26
Pit-02	0 - 1.0	92	2.5	13	17	0.52	0.68	0.19
	1.0 - 2.0	83	6.7	31	25	0.46	0.37	0.27
	2.0 - 3.0	21	0.68	6.0	7.5	0.88	1.1	0.05
Pit-03	0 - 1.0	92	2.3	8.7	15	0.38	0.65	0.23
	1.0 - 2.0	94	2.4	8.0	11	0.33	0.46	0.11
	2.0 - 3.0	94	2.4	2.5 U	2.5 U	0.10 U	0.10 U	0.11
Pit-04	0 - 1.0	93	2.5	30	25	1.2	1.0	0.40
	1.0 - 2.0	92	2.5	49	41	2.0	1.6	0.55
	2.0 - 3.0	89	3.2	24	33	0.75	1.0	0.53

Notes:
* - values shown are averages of primary sample and field duplicate
R - reported column value
S – secondary column value

Table 3-2
2005 500-foot Grid

Cell Number	% Fines (clay + Silt)		TOC (%)		Total PCBs – bulk (µg/kg)				Total PCBs – normalized (mg/kgOC)				Mercury (mg/kg)		Codes
					2003		2005		2003		2005				
	2003	2005	2003	2005	R	S	R	S	R	S	R	S	2003	2005	
2001	46	73	2.9	3.4	2,900	2,300	460	360	100	79	14	11	0.62	0.99	
2002	87	96	3.1	3.4	43	36	110	98	1.4	1.2	3.2	2.9	0.84	0.64	
2003	38	50	1.6	1.8	110	85	210	180	6.9	5.3	12	10	0.49	0.50	
2004	81	97	2.8	3.3	61	45	150	140	2.2	1.6	4.5	4.2	0.71	0.61	
2005	81	92	2.7	2.9	69	57	120	110	2.6	2.1	4.1	3.8	0.98	0.91	
2006	81	90	2.5	2.8	87	70	170	160	3.5	2.8	6.1	5.7	0.75	0.72	3
2007	84	93	2.5	2.7	78	53	150	130	3.1	2.1	5.6	4.8	0.90	0.87	
2008	85	90	2.4	2.6	130	110	180	160	5.4	4.6	6.9	6.2	0.91	0.89	
2009	90	90	2.7	2.6	110	84	120	110	4.1	3.1	4.6	4.2	0.98	0.55	
2010	46	60	1.2	1.7	70	53	170	150	5.8	4.4	10	8.8	0.42	0.48	
2011	84	88	2.2	2.3	120	120	100	87	5.5	5.5	4.3	3.8	4.5	0.59	
2012	89	90	3.1	2.4	86	79	68	60	2.8	2.5	2.8	2.5	0.45	0.52	
2013	82	89	3.1	2.8	250	230	73	67	8.1	7.4	2.6	2.4	1.1	0.50	5
2014	38	29	1.3	0.8	120	110	56	52	9.2	8.5	6.7	6.3	0.37	0.35	
2015	86	90	2.2	2.2	75	63	50	41	3.4	2.9	2.3	1.9	1.2	0.39	
2016	88	92	2.3	2.4	120	110	65	54	5.2	4.8	2.7	2.3	0.74	0.51	3
2017	89	96	2.6	2.8	160	150	100	85	6.2	5.8	3.6	3.0	0.72	0.87	
2018	45	37	2.5	1.1	100	86	56	48	4.0	3.4	5.1	4.4	0.35	0.32	
2019	77	86	2.1	2.2	180	160	130	120	8.6	7.6	5.9	5.5	4.1	0.84	
2020	94	93	2.5	2.8	140	100	120	97	5.6	4.0	4.3	3.5	0.66	0.81	
2021	65	66	1.7	1.8	120	84	84	69	7.1	4.9	4.7	3.8	0.48	0.39	
2022	98	98	2.8	3.1	160	110	120	94	5.7	3.9	3.9	3.0	0.80	0.66	
2023	85	94	2.7	3.0	210	150	140	110	7.8	5.6	4.7	3.7	0.86	0.59	
2024	92	88	2.7	3.2	290	240	190	160	11	8.9	5.9	5.0	0.84	0.71	
2025	82	92	2.8	2.9	520	380	270	240	19	14	9.3	8.3	1.1	0.76	3
2026	76	96	2.7	3.3	260	230	240	210	9.6	8.5	7.3	6.4	0.82	0.70	
2027	89	83	2.9	3.6	290	240	190	160	10	8.3	5.3	4.4	0.69	0.67	
2028	56	74	2.0	2.0	230	210	210	190	12	11	11	9.5	0.68	0.65	
2029	71	92	3.4	3.4	330	290	310	270	9.7	8.5	9.1	7.9	1.0	0.83	
2030	85	87	3.0	3.1	340	320	2,400	1,900	11	11	77	61	0.82	0.76	
2031	93	94	2.9	2.9	270	150	370	340	9.3	5.2	13	12	0.75	1.1	3
2032	93	95	2.6	2.7	160	110	170	130	6.2	4.2	6.3	4.8	0.83	0.85	
2033	86	90	3.1	3.0	470	370	390	340	15	12	13	11	1.4	1.2	
2034	55	77	2.3	2.7	710	620	240	210	31	27	8.9	7.8	1.2	0.62	
2035	79	73	2.7	2.2	200	190	420	380	7.4	7.0	19	17	0.58	0.56	
2036	91	85	2.9	3.1	240	210	170	160	8.3	7.2	5.5	5.2	0.74	0.77	
2037	89	87	2.8	3.3	210	160	160	160	7.5	5.7	4.8	4.8	0.30	0.58	

Table 3-2 (Continued)
2005 500-foot Grid

Cell Number	% Fines (clay + Silt)		TOC (%)		Total PCBs – bulk (µg/kg)				Total PCBs – normalized (mg/kgOC)				Mercury (mg/kg)		Codes
					2003		2005		2003		2005				
	2003	2005	2003	2005	R	S	R	S	R	S	R	S	2003	2005	
2038	71	71	2.3	2.1	200	150	85	71	8.7	6.5	4.0	3.4	0.91	0.65	
2039	34	45	1.8	3.0	200	200	430	470	11	11	14	16	1.2	1.4	
2040	68	73	2.5	2.7	600	480	330	280	24	19	12	10	1.1	0.77	
2041	65	71	2.6	3.8	280	260	200	180	11	10	5.3	4.7	0.82	0.65	
2042	76	82	2.6	2.8	260	180	240	270	10	6.9	8.6	9.6	0.75	1.5	
2043	65	77	3.5	2.7	160	140	180	170	4.6	4.0	6.7	6.3	0.50	1.3	
2044	86	94	2.8	3.0	120	110	110	120	4.3	3.9	3.7	4.0	0.85	0.57	
2045	52	55	3.0	2.3	250	260	200	180	8.3	8.7	8.7	7.8	0.61	0.54	
2046	29	34	1.2	2.0	520	490	140	120	43	41	7.0	6.0	0.42	0.38	
2047	77	80	2.2	2.3	150	110	2,900	2,700	6.8	5	130	120	0.53	0.55	
2048	91	95	3.0	3.1	100	96	110	100	3.3	3.2	3.5	3.2	0.71	0.89	
2049	81	43	2.6	1.6	820	740	170	160	32	28	11	10	0.59	0.42	
2050	85	88	2.6	2.8	170	150	150	130	6.5	5.8	5.4	4.6	0.57	0.57	
2051	80	97	3.3	3.1	120	100	120	99	3.6	3	3.9	3.2	0.57	0.80	
2052	75	93	2.4	3.1	790	740	440	480	33	31	14	15	0.93	0.73	3
2053	81	83	2.6	2.6	300	300	160	130	12	12	6.2	5.0	0.68	0.42	3
2054	80	83	3.3	3.8	190	190	160	120	5.8	5.8	4.2	3.2	0.66	0.61	
2055	49	63	2.1	4.5	350	380	350	320	17	18	7.8	7.1	0.53	0.76	
2056	81	71	3.2	4.2	630	600	450	440	20	19	11	10	0.85	1.2	
2057	69	88	5.1	3.1	330	280	310	260	6.5	5.5	10	8.4	2.1	1.9	
2058	84	87	2.9	3.0	170	170	110	100	5.9	5.9	3.7	3.3	0.52	0.70	
2059	77	79	3.6	3.6	350	330	210	170	9.7	9.2	5.8	4.7	1.2	1.9	
2060	48	54	3.1	2.7	440	430	520	470	14	14	19	17	4.3	19	
2061	41	32	1.8	2.2	210	190	150	120	12	11	6.8	5.5	0.35	0.31	
2062	81	87	3.1	2.9	200	180	130	110	6.5	5.8	4.5	3.8	0.71	0.63	5
2063	71	56	5.0	2.6	1,100	920	520	470	22	18	20	18	6.1	3.3	
2064	77	85	3.6	3.4	570	470	460	410	16	13	14	12	1.9	2.0	5
2065	76	72	2.7	2.8	310	240	350	320	11	8.9	13	11	1.1	0.67	
2066	73	87	3.3	3.5	400	320	220	200	12	9.7	6.3	5.7	0.74	0.94	5
2067	56	58	4.5	3.3	510	410	370	340	11	9.1	11	10	1.9	5.7	
2068	87	66	2.8	3.0	380	300	270	240	14	11	9.0	8.0	0.49	0.94	
2069	38	36	2.4	1.7	160	86	91	82	6.7	3.6	5.4	4.8	0.56	0.57	
2070	72	86	2.6	2.8	37	29	110	97	1.4	1.1	3.9	3.5	0.65	0.58	
2071	17	18	0.85	0.71	35	31	28	26	4.1	3.6	3.9	3.7	0.16	0.25	
Average	73	77	2.7	2.7	300	260	270	240	11	9.6	10	9.0	1.0	1.1	

Table 3-2 (Continued)
2005 500-foot Grid

Notes:
Code of 3 - 2003 values shown are averages of primary sample and field duplicate
Code of 5 - 2005 values shown are averages of primary sample and field duplicate
R - reported column value
S - secondary column value

Table 3-3
2005 Dredged Area Surface Sediment

Sample Number	% Fines (clay + silt)	TOC (%)	Total PCBs -bulk (µg/kg)		Total PCBs - normalized (mg/kgOC)		Mercury (mg/kg)
			R	S	R	S	
Navigation Dredging Area - Pier D							
ND1	88	2.6	230	200	8.8	7.7	0.74
ND2	86	3	530	430	18	14	0.68
Remediation Dredging Area - Pier 3							
RD1	86	2.9	420	330	14	11	1.4
RD2	79	2.7	810	630	30	23	1.2

Notes:
R - reported column value
S - secondary column value

Table 3-4
2005 Dredged Area Cores

Location Number*	Core Segment (centimeters below top of core)	% Fines (clay + silt)	TOC (%)	Total PCBs - bulk (µg/kg) R	Total PCBs - bulk (µg/kg) S	Total PCBs - normalized (mg/kgOC) R	Total PCBs - normalized (mg/kgOC) S	Mercury (mg/kg)	Codes
Navigation Dredging Area – Pier D									
NDC1	0 - 5	87	2.9	260	230	9.0	7.9	0.64	
	5 - 10	84	1.8	500	430	28	24	0.43	
	10 - 15	88	1.6	72	62	4.5	3.9	0.21	
	0 – 10**	85	2.4	380	330	19	16	0.54	
NDC2	0 - 5	88	2.9	1,100	1,300	38	45	0.56	
	5 - 10	91	2.4	270	240	11	10	0.44	
	10 - 15	92	2.1	120	110	5.7	5.2	0.36	
	0 – 10**	90	2.7	690	770	25	28	0.50	
Remediation Dredging Area – Pier 3									
RDC1	0 - 5	75	2.4	440	440	18	18	0.88	
	5 - 10	75	1.9	530	500	28	26	0.87	
	10 - 15	86	1.9	96	92	5.1	4.8	0.38	
	0 – 10**	75	2.2	490	470	23	22	0.88	
RDC2	0 - 5	84	2.6	700	670	27	26	1.8	
	5 - 10	81	2.2	720	690	33	31	1.3	
	10 - 15	87	2.2	500	440	23	20	0.88	***
	0 – 10**	83	2.4	710	680	30	29	1.6	

Notes:
* - multiple closely-spaced cores collected to obtain necessary sample quantity
** - values shown are computed as averages of values for 0 – 5 and 5 – 10 cm horizons
*** - values shown are averages of primary sample and field duplicate
R - reported column value
S - secondary column value

Table 3-5
Influence of Data Variability Study and Sample Reanalysis Results on PCB AWA Values for OU B Marine

Cell Number	Codes	Total PCBs – normalized (mg/kgOC)									
		2003		2005							
				Primary Results		with DVS		with Reanalysis		with DVS and Reanalysis	
		R	S	R	S	R	S	R	S	R	S
2001	V	100	79	14	11	14	11	14	11	14	11
2002	V	1.4	1.2	3.2	2.9	4.9	4.0	3.2	2.9	4.9	4.0
2003		6.9	5.3	12	10	12	10	12	10	12	10
2004		2.2	1.6	4.5	4.2	4.5	4.2	4.5	4.2	4.5	4.2
2005		2.6	2.1	4.1	3.8	4.1	3.8	4.1	3.8	4.1	3.8
2006		3.5	2.8	6.1	5.7	6.1	5.7	6.1	5.7	6.1	5.7
2007		3.1	2.1	5.6	4.8	5.6	4.8	5.6	4.8	5.6	4.8
2008		5.4	4.6	6.9	6.2	6.9	6.2	6.9	6.2	6.9	6.2
2009		4.1	3.1	4.6	4.2	4.6	4.2	4.6	4.2	4.6	4.2
2010	V	5.8	4.4	10	8.8	8.9	6.7	10	8.8	8.9	6.7
2011		5.5	5.5	4.3	3.8	4.3	3.8	4.3	3.8	4.3	3.8
2012		2.8	2.5	2.8	2.5	2.8	2.5	2.8	2.5	2.8	2.5
2013		8.1	7.4	2.6	2.4	2.6	2.4	2.6	2.4	2.6	2.4
2014		9.2	8.5	6.7	6.3	6.7	6.3	6.7	6.3	6.7	6.3
2015		3.4	2.9	2.3	1.9	2.3	1.9	2.3	1.9	2.3	1.9
2016		5.2	4.8	2.7	2.3	2.7	2.3	2.7	2.3	2.7	2.3
2017		6.2	5.8	3.6	3.0	3.6	3.0	3.6	3.0	3.6	3.0
2018		4.0	3.4	5.1	4.4	5.1	4.4	5.1	4.4	5.1	4.4
2019		8.6	7.6	5.9	5.5	5.9	5.5	5.9	5.5	5.9	5.5
2020		5.6	4.0	4.3	3.5	4.3	3.5	4.3	3.5	4.3	3.5
2021	V	7.1	4.9	4.7	3.8	5.0	3.9	4.7	3.8	5.0	3.9
2022		5.7	3.9	3.9	3.0	3.9	3.0	3.9	3.0	3.9	3.0
2023		7.8	5.6	4.7	3.7	4.7	3.7	4.7	3.7	4.7	3.7
2024		11	8.9	5.9	5.0	5.9	5.0	5.9	5.0	5.9	5.0
2025		19	14	9.3	8.3	9.3	8.3	9.3	8.3	9.3	8.3
2026	V	9.6	8.5	7.3	6.4	15	13	7.3	6.4	15	13
2027		10	8.3	5.3	4.4	5.3	4.4	5.3	4.4	5.3	4.4
2028		12	11	11	9.5	11	9.5	11	9.5	11	9.5
2029		9.7	8.5	9.1	7.9	9.1	7.9	9.1	7.9	9.1	7.9
2030	R	11	11	77	61	77	61	27	22	27	22
2031		9.3	5.2	13	12	13	12	13	12	13	12
2032		6.2	4.2	6.3	4.8	6.3	4.8	6.3	4.8	6.3	4.8
2033		15	12	13	11	13	14	13	11	13	11

Table 3-5 (Continued)
Influence of Data Variability Study and Sample Reanalysis Results on PCB AWA Values for OU B Marine

Cell Number	Codes	Total PCBs – normalized (mg/kgOC)									
				2005							
		2003		Primary Results		with DVS		with Reanalysis		with DVS and Reanalysis	
		R	S	R	S	R	S	R	S	R	S
2034		31	27	8.9	7.8	8.9	7.8	8.9	7.8	8.9	7.8
2035		7.4	7.0	19	17	19	17	19	17	19	17
2036	R	8.3	7.2	5.5	5.2	5.5	5.2	6	5.5	6	5.5
2037	V	7.5	5.7	4.8	4.8	7.2	6.4	4.8	4.8	7.2	6.4
2038		8.7	6.5	4.0	3.4	4.0	3.4	4.0	3.4	4.0	3.4
2039		11	11	14	16	14	16	14	16	14	16
2040		24	19	12	10	12	10	12	10	12	10
2041		11	10	5.3	4.7	5.3	4.7	5.3	4.7	5.3	4.7
2042		10	6.9	8.6	9.6	8.6	9.6	8.6	9.6	8.6	9.6
2043		4.6	4.0	6.7	6.3	6.7	6.3	6.7	6.3	6.7	6.3
2044	V	4.3	3.9	3.7	4.0	4.7	4.0	3.7	4.0	4.7	4.0
2045		8.3	8.7	8.7	7.8	8.7	7.8	8.7	7.8	8.7	7.8
2046	R	43	41	7.0	6.0	7.0	6.0	6.8	6.1	6.8	6.1
2047	R	6.8	5.0	130	120	130	120	36	33	36	33
2048		3.3	3.2	3.5	3.2	3.5	3.2	3.5	3.2	3.5	3.2
2049		32	28	11	10	11	10	11	10	11	10
2050		6.5	5.8	5.4	4.6	5.4	4.6	5.4	4.6	5.4	4.6
2051	R	3.6	3.0	3.9	3.2	3.9	3.2	3.6	3.1	3.6	3.1
2052	V	33	31	14	15	13	13	14	15	13	13
2053		12	12	6.2	5.0	6.2	5.0	6.2	5.0	6.2	5.0
2054		5.8	5.8	4.2	3.2	4.2	3.2	4.2	3.2	4.2	3.2
2055		17	18	7.8	7.1	7.8	7.1	7.8	7.1	7.8	7.1
2056		20	19	11	10	11	10	11	10	11	10
2057	V	6.5	5.5	10	8.7	25	22	10	8.7	25	22
2058		5.9	5.9	3.7	3.3	3.7	3.3	3.7	3.3	3.7	3.3
2059		9.7	9.2	5.8	4.7	5.8	4.7	5.8	4.7	5.8	4.7
2060	V	14	14	19	17	22	23	19	17	22	23
2061		12	11	6.8	5.5	6.8	5.5	6.8	5.5	6.8	5.5
2062		6.5	5.8	4.5	3.8	4.5	3.8	4.5	3.8	4.5	3.8
2063		22	18	20	18	20	18	20	18	20	18
2064		16	13	14	12	14	12	14	12	14	12
2065		11	8.9	13	11	13	11	13	11	13	11
2066		12	9.7	6.3	5.7	6.3	5.7	6.3	5.7	6.3	5.7

Table 3-5 (Continued)
Influence of Data Variability Study and Sample Reanalysis Results on PCB AWA Values for OU B Marine

Cell Number	Codes	Total PCBs – normalized (mg/kgOC)									
		2003		2005							
				Primary Results		with DVS		with Reanalysis		with DVS and Reanalysis	
		R	S	R	S	R	S	R	S	R	S
2067	R	11	9.1	11	10	11	10	7.2	6.2	7.2	6.2
2068		14	11	9.0	8.0	9.0	8.0	9.0	8.0	9.0	8.0
2069		6.7	3.6	5.4	4.8	5.4	4.8	5.4	4.8	5.4	4.8
2070		1.4	1.1	3.9	3.5	3.9	3.5	3.9	3.5	3.9	3.5
2071		4.1	3.6	3.9	3.7	3.9	3.7	3.9	3.7	3.9	3.7
Average		11	9.6	10	9.0	11	9.4	8.1	7.2	8.5	7.6

Notes:
Code "V" - data variability study cell (8-way averages shown in appropriate table columns)
Code "R" - reanalyzed cell (4-way averages shown in appropriate table columns)
Column heading R - Reported column value, S = Secondary column value

Table 3-6
2005 1,500-foot Grid

Cell Number	% Fines (clay + silt)		TOC (%)		Total PCBs - bulk (µg/kg)				Total PCBs - normalized (mg/kgOC)				Mercury (mg/kg)		Codes
					2003		2005		2003		2005				
	2003	2005	2003	2005	R	S	R	S	R	S	R	S	2003	2005	
2301	29	55	1.3	2.0	210	170	50	42	16	13	2.5	2.1	0.081	0.10	
2302	37	40	0.86	0.94	29	21	19	15	3.4	2.4	2.0	1.6	0.081	0.09	
2303	29	26	1.6	1.5	84	69	22	17	5.3	4.3	1.5	1.1	0.084	0.08	
2304	23	25	0.94	1.1	17	16	13	16	1.8	1.7	1.2	1.5	0.071	0.08	
2305	64	71	2.8	3.8	110	78	110	100	3.9	2.8	2.9	2.6	0.44	0.45	
2306	95	88	3.6	4.1	170	130	150	130	4.7	3.6	3.7	3.2	0.11	0.87	
2307	96	95	4.1	4.3	100	87	220	200	2.4	2.1	5.1	4.7	0.83	0.62	
2308	96	96	3.6	3.3	130	92	140	130	3.6	2.6	4.2	3.9	0.14	0.83	
2309	97	85	3.8	4.0	160	110	150	130	4.2	2.9	3.8	3.3	0.81	0.63	
2310	98	98	3.4	3.7	160	81	240	220	4.7	2.4	6.5	5.9	0.88	0.72	
2311	92	87	3.5	3.5	120	74	120	120	3.4	2.1	3.4	3.4	0.82	0.74	
2312	19	20	0.77	0.97	23	21	20	16	3.0	2.7	2.1	1.6	0.15	0.15	
2313	91	95	3.0	3.2	65 U	65 U	140	130	2.2 U	2.2 U	4.4	4.1	0.72	0.78	
2314	85	97	3.5	3.8	190	100	130	120	5.4	2.9	3.4	3.2	0.84	0.60	3
2315	98	98	3.3	4.0	160	120	110	100	4.8	3.6	2.8	2.5	0.84	0.56	
2316	94	93	3.6	4.2	160	120	120	120	4.4	3.3	2.9	2.9	0.74	0.48	
2317	90	96	3.2	2.9	180	120	120	100	5.6	3.8	4.1	3.4	0.81	0.70	
2318	87	97	3.2	3.4	150	95	110	95	4.7	3.0	3.2	2.8	0.84	0.65	
2319	97	96	3.0	3.7	120	77	110	100	4.0	2.6	3.0	2.7	0.71	0.52	
2320	86	94	2.8	3.1	120	75	110	97	4.3	2.7	3.5	3.1	0.59	0.58	

Table 3-6 (Continued)
2005 1,500-foot Grid

Cell Number	% Fines (clay + silt)		TOC (%)		Total PCBs - bulk (µg/kg)				Total PCBs - normalized (mg/kgOC)				Mercury (mg/kg)		Codes
					2003		2005		2003		2005				
	2003	2005	2003	2005	R	S	R	S	R	S	R	S	2003	2005	
2321	83	94	2.6	3.3	230	130	170	150	8.8	5.0	5.2	4.5	0.98	1.3	
2322	95	90	2.7	3.3	130	85	77	71	4.8	3.1	2.3	2.2	0.64	0.53	3
2323	63	67	2.4	2.6	98	65	57	50	4.1	2.7	2.2	1.9	0.46	0.42	
2324	80	82	2.7	2.9	130	79	86	80	4.8	2.9	3.0	2.8	0.59	0.62	
2325	56	51	1.6	1.7	77	47	47	38	4.8	2.9	2.8	2.2	0.39	0.42	
2326	13	13	0.54	0.42	7.5	5.6	2.5 U	2.5 U	1.4	1.0	0.60 U	0.60 U	0.025	0.02	
2327	80	84	3.5	2.9	120	69	100	91	3.4	2.0	3.4	3.1	0.60	0.58	
2328	75	82	2.5	2.8	99	61	76	63	4.0	2.4	2.7	2.3	0.60	0.60	
2329	49	49	1.5	1.8	49	37	47	39	3.3	2.5	2.6	2.2	0.31	0.24	
2330	9	16	0.35	0.41	2.5 U	2.5 U	2.6 U	2.6 U	0.71 U	0.71 U	0.63 U	0.63 U	0.022	0.06	
2331	81	83	2.4	2.6	92	57	78	72	3.8	2.4	3.0	2.8	0.55	0.52	5
2332	39	32	1.4	1.1	73	52	33	30	5.2	3.7	3.0	2.7	0.39	0.36	
Average	69	72	2.5	2.7	110	75	93	84	4.4	3.1	3.1	2.7	0.50	0.50	
w/o 2301	71		2.5		110	72			4.0	2.7			0.52		

Notes:
R - reported column value
S - secondary column value
U - analyte not detected
3 - 2003 values shown are averages of primary sample and field duplicate
5 - 2005 values shown are averages of primary sample and field duplicate

Table 3-7
2005 CAD Pit Apron

Cell Number	% Fines (clay + silt)		TOC (%)		Total PCBs - bulk (µg/kg)				Total PCBs - normalized (mg/kgOC)				Mercury (mg/kg)		Codes
					2003		2005		2003		2005				
	2003	2005	2003	2005	R	S	R	S	R	S	R	S	2003	2005	
1CP	88	89	2.2	2.6	160	150	71	66	7.3	6.8	2.7	2.5	0.80	0.79	
2CP	87	88	2.2	2.4	98	87	86	76	4.5	4.0	3.6	3.2	0.48	0.59	
3CP	83	91	2.7	2.4	170	150	50	46	6.3	5.6	2.1	1.9	0.81	0.84	
4CP	53	56	1.5	1.5	210	190	150	130	14	13	10	8.7	0.71	0.50	5
5CP	82	83	2.1	2.2	310	290	350	310	15	14	16	14	0.96	1.3	
6CP	69	78	1.6	1.9	480	440	480	400	30	28	25	21	1.2	1.6	
7CP	84	88	2.2	2.4	240	220	160	140	11	10	6.7	5.8	0.68	0.75	
8CP	84	86	2.3	2.3	260	240	150	130	11	10	6.5	5.7	0.76	0.80	
9CP	84	87	2.3	2.4	270	250	250	210	12	11	10	8.8	0.70	0.80	
10CP	82	87	2.4	2.3	270	270	81	76	11	11	3.5	3.3	0.45	0.61	3
11CP	83	89	2.2	2.5	57	82	59	53	2.6	3.7	2.4	2.1	0.49	0.37	
12CP	90	92	3.2	2.4	95	66	62	56	3.0	2.1	2.6	2.3	0.58	0.38	
13CP	81	91	2.2	2.5	130	120	280	230	5.9	5.5	11	9.2	0.64	0.62	
14CP	86	90	2.2	2.4	100	97	73	63	4.5	4.4	3.0	2.6	0.54	0.60	
15CP	85	89	2.3	2.5	150	140	94	77	6.5	6.1	3.8	3.1	0.65	0.60	5
Area-weighted Average*	80	84	2.1	2.3	210	200	180	150	11	9.9	8.3	7.2	0.72	0.78	

*Calculated using actual (non-equal) cell areas

Table 3-7 (Continued)
2005 CAD Pit Apron

Notes:
3 - 2003 values shown are averages of primary sample and field duplicate
5 - 2005 values shown are averages of primary sample and field duplicate
R - reported column value
S - secondary column value